

NATO's use of Semantic MediaWiki for Enterprise Architecture

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NATO's essential purpose is to safeguard the freedom and security of its members through political and military means.

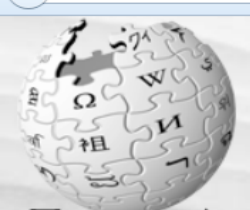
POLITICAL - *NATO promotes democratic values and encourages [consultation](#) and cooperation on defence and security issues to build trust and, in the long run, prevent conflict.*

MILITARY - *NATO is committed to the peaceful resolution of disputes. If diplomatic efforts fail, it has the military capacity needed to undertake [crisis-management](#) operations. These are carried out under [Article 5 of the Washington Treaty](#) - NATO's founding treaty - or under a UN mandate, alone or in cooperation with other countries and international organizations.*



Allied Command Transformation





TIDEPEDIA
A NATO Wikipedia Companion
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Main Page

Before using this Wiki, please read the [Tidepedia User Agreement](#) and [Overall Disclaimer](#).

Welcome to Tidepedia, the online information repository for the [TIDE](#) community. Tidepedia is modelled after [Wikipedia](#), an Internet open source encyclopedia collaboratively written by volunteers. Members of the [TIDE](#) community can and are strongly encouraged to create and edit articles in this repository. Over time, this repository has become the collective "knowledge base" for this community.

[Tidepedia Help](#) is available to get you started quickly, and offers guidelines for editing, design, and other supporting information. Additionally there is [Training](#) information that can provide greater insight into Tidepedia. If you still find Wiki mark-up intimidating, feel free to experiment in our [Sandbox](#).



About TIDE

- [TIDE](#) for an overview of the initiative
 - [NATO C3 Classification Taxonomy](#) (what's behind the candy colors)
 - [Enterprise Mapping](#) to navigate the complex C3 landscape
 - [Acronyms, Terms and Definitions, Graphs, Brochures and Posters](#)
- [More TIDE Information...](#)



em:Main Page

Events

- [CWIX 2014 Execution in Bydgoszcz POL](#) (2-19 June 2014)
 - [FMN Metadata and Application Workshop #6](#) in Ottawa CAN (15-16 July 2014)
 - [FMN Seminar in Vilnius LTU](#) (1-2 October 2014)
 - [TIDE Sprint](#) in Virginia Beach VA (27-31 October 2014)
- [More events...](#)



News

- [19DEC13 Final report of the Fall 2013 TIDE Sprint](#) published
 - [17DEC13 NATO FMN Implementation Plan](#) signed and submitted to MC
 - [05DEC13 NNEC Portal](#) created by Hank Curry
- [More news...](#)



Communities of Interest

1. [Enterprise Architecture Portal](#)
 2. [Cyber Defence Portal](#)
 3. [FMN Portal](#) and [AMN Portal](#)
 4. [NATO Coalition Warrior Interoperability Exercise \(CWIX\)](#)
 5. [C3B Architecture CAT](#) and [Architecture Mngmt Group](#)
 6. [JISR Portal](#)
 7. [C3B Interoperability Profiles Capability Team Portal \(IP CaT\)](#)
 8. [Bi-Strategic Commanders Data Link Migration Strategy \(Bi-SC DLMS\) Portal](#)
 9. [NATO Network Enabled Capability \(NNEC\) Portal](#)
 10. [Modeling & Simulation Portal](#)
 11. [Innovation Portal](#)
 12. [Information Exchange Gateway \(IEG\) Portal](#)
 13. [Geospatial Portal](#)
 14. [CIMIC Portal](#)
 15. [BRITE Portal](#)
 16. [NATO Vector Graphics \(NVG\)](#)
 17. [Cloud Computing and Mobile Computing](#)
 18. [Core Enterprise Services Portal](#)
 19. [Agile Information Exploitation](#)
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- [List of all Portals on Tidepedia](#)



Tidepedia
11 October 2005

Tidepedia is hosted by [Allied Command Transformation \(ACT\)](#) and is driven by an Open Source [Wiki](#) engine called M...

Enterprise Architecture (EA)

Enterprise Architecture (EA) is the process of translating business vision and strategy into effective enterprise change by creating, communicating and improving the key requirements, principles and models that describe the enterprise's future state and enable its evolution. (*Gartner*)

In an analogy to geospatial referencing, the EA effort in NATO "*charts*" the C3 "*landscape*".

This activity is referred to as "*enterprise mapping*" (EM). Its purpose is to capture concepts from communities of interest, and map them for item classification, integration and harmonization.



Main Page

Welcome to the **TIDE Enterprise Mapping (EM)** portal. This Wiki was set up to develop, maintain and disseminate simple yet powerful mapping products that semantically categorize and link information from operational, transformational, implementation and support taxonomies. Operational planners, program and project managers, capability implementers, researchers, experimenters and support organizations should use this Wiki to develop a better understanding of the complex relationships between various aspects of **NATO** and National **NNEC** programs. Please follow the appropriate link on the right to enter our woven web of knowledge.



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Concepts

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Contributors

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News

- **31JAN14** Replaced the "Generated Reports" page by [Daily Perspectives](#)
- **20AUG13** Update of [Allied Publications](#) and [STANAGs](#)
- **20AUG13** Introduction of [ACO Manuals](#) and [ACO, ACT](#) and [Bi-SC Directives](#)
- **16AUG13** Introduction of [GEOINT Standards](#)
- **08AUG13** Update of [MC/MCM Documents](#)
- **05AUG13** Introduction of [IETF Requests for Comments](#)
- **25JUL13** Introduction [ITU-R/ITU-T Recommendations](#) and [W3C Standards](#)

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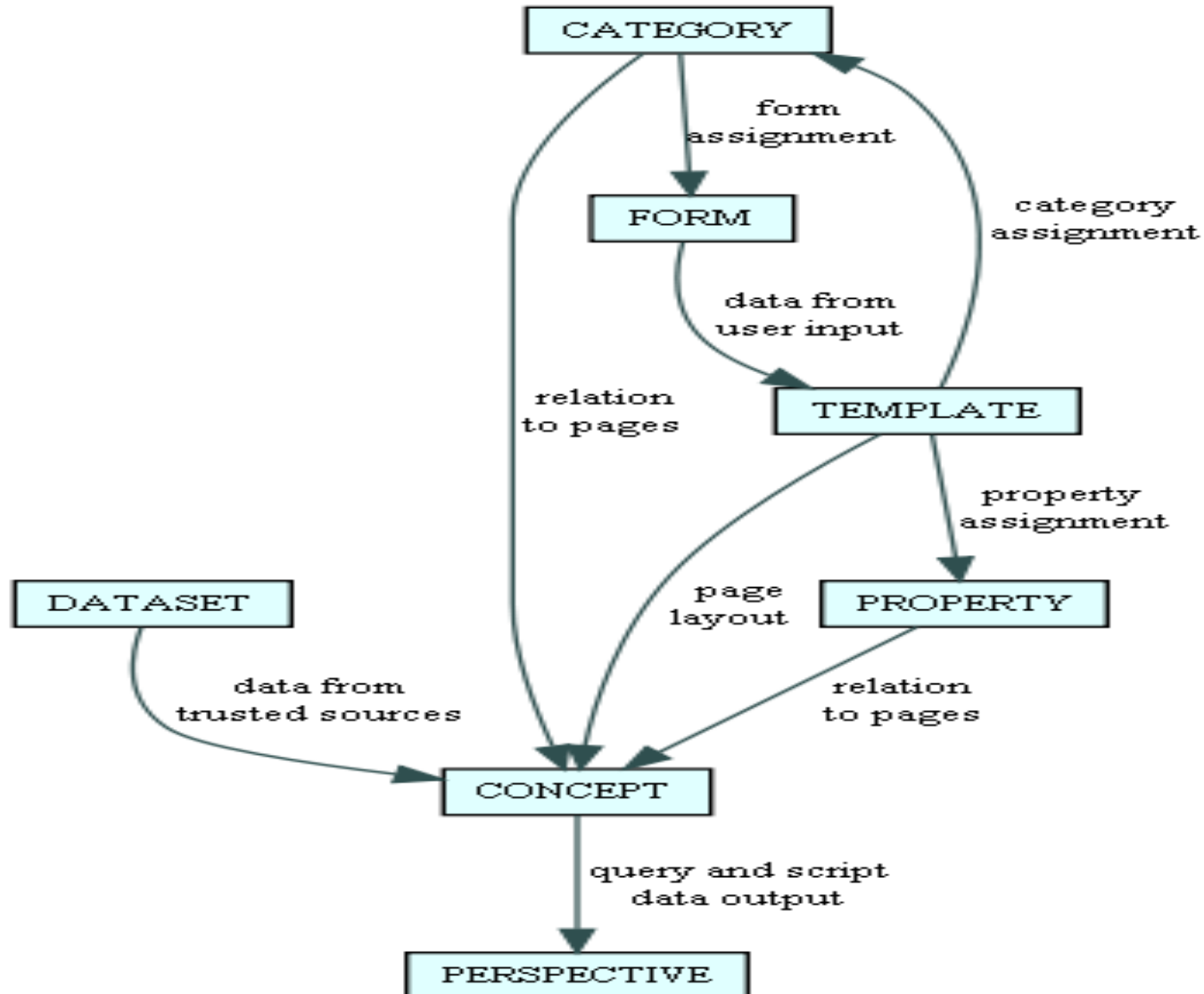
Architecture Framework

- Enterprise Architecture (EA) is facilitated by the use of an architecture framework that defines:
 1. a metamodel,
 2. architectural views, and
 3. a data exchange mechanism.
- 1. The metamodel is created through semantic relations between data "concepts" (*note: not using the Concepts namespace*)
- 2. The views are created through semantic queries or, in some cases, by offline processing of data dumps.
- 3. The data exchange mechanism is supported by the production of several types of data dumps, by semantic queries and by baselined versions of the wiki.

EM Wiki Structure

- **Concepts** - defines the sets of pages with information about specific taxonomy elements
- **Datasets** - provide data from trusted sources that is used to fill certain concepts
- **Templates** - provide code to build pages with content and to assign semantic properties and categories
- **Forms** - provide a user interface for input of data from subject matter experts and scientists
- **Categories** - gather concepts or selections of concepts based upon characteristics
- **Properties** - represent semantic values of pages
- **Perspectives** - displays parts of the combined data collection in pre-defined report formats (views)

EM Wiki Structure



EM Wiki Concepts

- In the context of Enterprise Mapping, a concept is an abstract representation of business information.
- A concept is implemented as a consistent set of metadata, a template, a category and optionally a form.
- A concept can be divided into several sub-concepts based on object-oriented principles.

EM Wiki Concepts


Concept definition pages are stored in the project namespace, because they contain only information that is relevant for governance of the EM wiki, and not for the Enterprise Mapping process itself.

These pages typically contain the following sections:

- **Definition** - including semantic fields for title, possible parent or children concepts, the source datasets, links to pages with the category, template and form, naming conventions and more
- **Description** - from a semantic field for description
- **Template** - tables for the main template and internal objects, providing the attribute names, properties, types and descriptions
- **Context** - a graphical interpretation of the concept structure, with the used properties, and relationships with other concepts

EM Wiki Concepts (definition)

This page describes the **Services** concept in the EM wiki.

Title	: Services
Topic	: Technical Services
Category	: Category:Services - 300 records
Template	: Template:Service ; Template:Service Function ; Template:Service Non-Functional
Form	: Form:Service
Concept Type	: Dynamic
Color	: #ebf0dc
Logo	: Services.png -- 

Description

The Technical Services express the requirements for a set of related software and hardware functionalities that can be reused for different purposes, together with the policies that should control their usage. These requirements are derived from the operational needs expressed by the collection of User-Facing Capabilities. Inherently, the Technical Services must support all NATO Mission Types.

Technical Services are implemented in a federated model that allows NATO and the Nations to jointly provide a robust and secure platform on top of which powerful User Applications can be run. Thus the Technical Services provide the foundation for the NATO Network Enabled Capability (NNEC). They must implement agreed and open standards, must exhibit plug-and-play properties, and must be transparent to operational users.

The complete collection of Technical Services is often referred to as the Technical Services Framework (TSF) or NNEC Services Framework (NSF).

EM Wiki Concepts (template)

Service

[Template:Service](#) -- A major template for the institution of the Services concept.

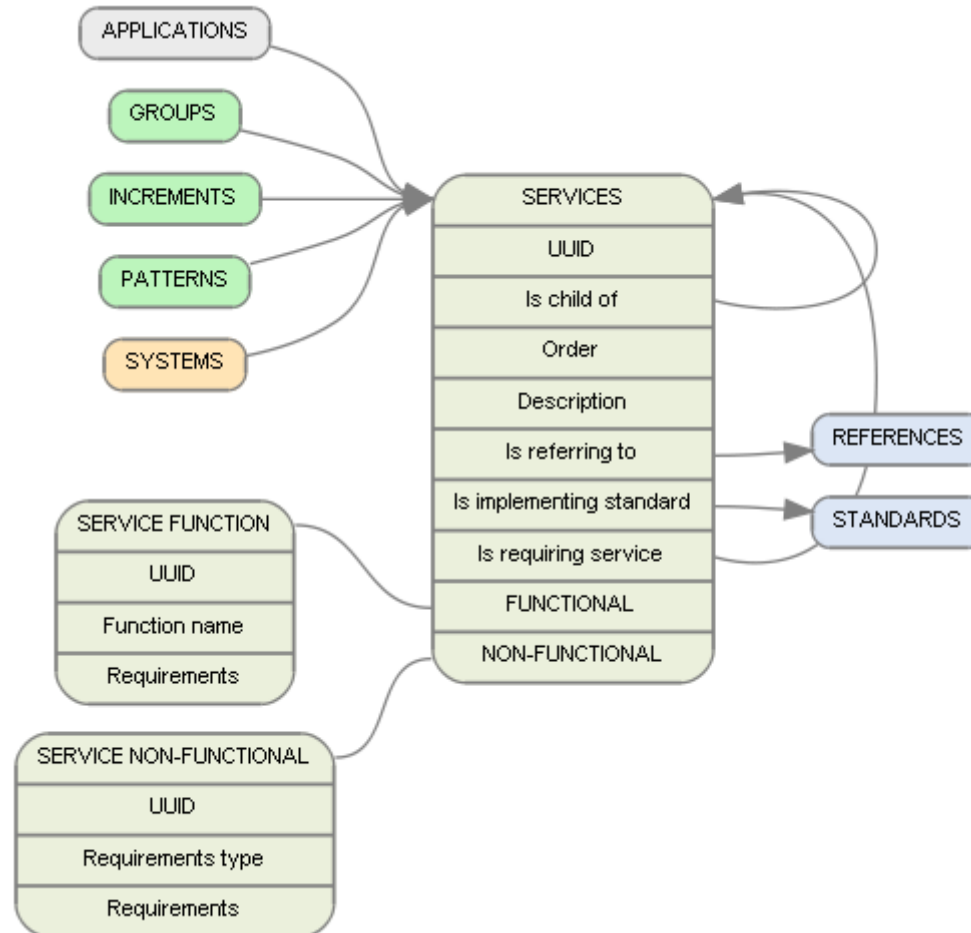
Property	Datatype	Attribute	Description
UUID	String	uuid	A 16-byte (128-bit) number in 5 groups separated by hyphens, compliant with RFC 4122 . These UUIDs do not play a role in the semantic relationships between datasets; they are introduced for post-processing data dumps from the wiki, by uniquely identifying information without significant central coordination.
Is child of	Page	parent	A semantic link with the higher level in a parent-child relationship.
Order	Number	order	An integer value commonly used for sorting sibling entities.
Description	Text	description	A free text format to describe the purpose, relevance and functionality of a certain entity.
Is referring to	Page	references	A semantic link with the References concept.
Is implementing standard	Page	standards	A semantic link with the Standards concept.
Is requiring service	Page	services	A semantic link with the Services concept, to list the back-end services required for this element.
FUNCTION	Internal Object		Link with an internal object for definition of functional requirements.
NON-FUNCTIONAL	Internal Object		Link with an internal object for definition of non-functional requirements.

Service Function

[Template:Service Function](#) -- A sub-object for the definition of functional requirements in the Services concept.

Property	Datatype	Attribute	Description
UUID	String	uuid	A 16-byte (128-bit) number in 5 groups separated by hyphens, compliant with RFC 4122 . These UUIDs do not play a role in the semantic relationships between datasets; they are introduced for post-processing data dumps from the wiki, by uniquely identifying information without significant central coordination.
Function name	String	name	A name for a task or function. It must begin with a verb.
Requirements	Text	requirements	A requirement definition of a certain architectural building block in the format of a flat bullet list (one level only) with shall statements - e.g. "* The xxx Services shall..."

EM Wiki Concepts (context)



EM Wiki Datasets

- In the context of Enterprise Mapping, a *dataset* is an externally managed set of business information that is processed and imported into selected concepts and their relationships.
- EM Wiki uses Python scripts for import of source data.

EM Wiki Datasets

Dataset definition pages are stored in the project namespace, because they contain only information that is relevant for governance of the EM wiki, and not for the Enterprise Mapping process itself.

These pages typically contain the following sections:

- **Definition** - including semantic fields for title, possible parent or children concepts, the source datasets, links to pages with the category, template and form, naming conventions and more
- **Description** - from a semantic field for description
- **Data Usage** - listing concepts that use this dataset
- **Data Source** - links or uploaded source files, plus contact details
- **Data Structure** - table providing the fields, types and remarks

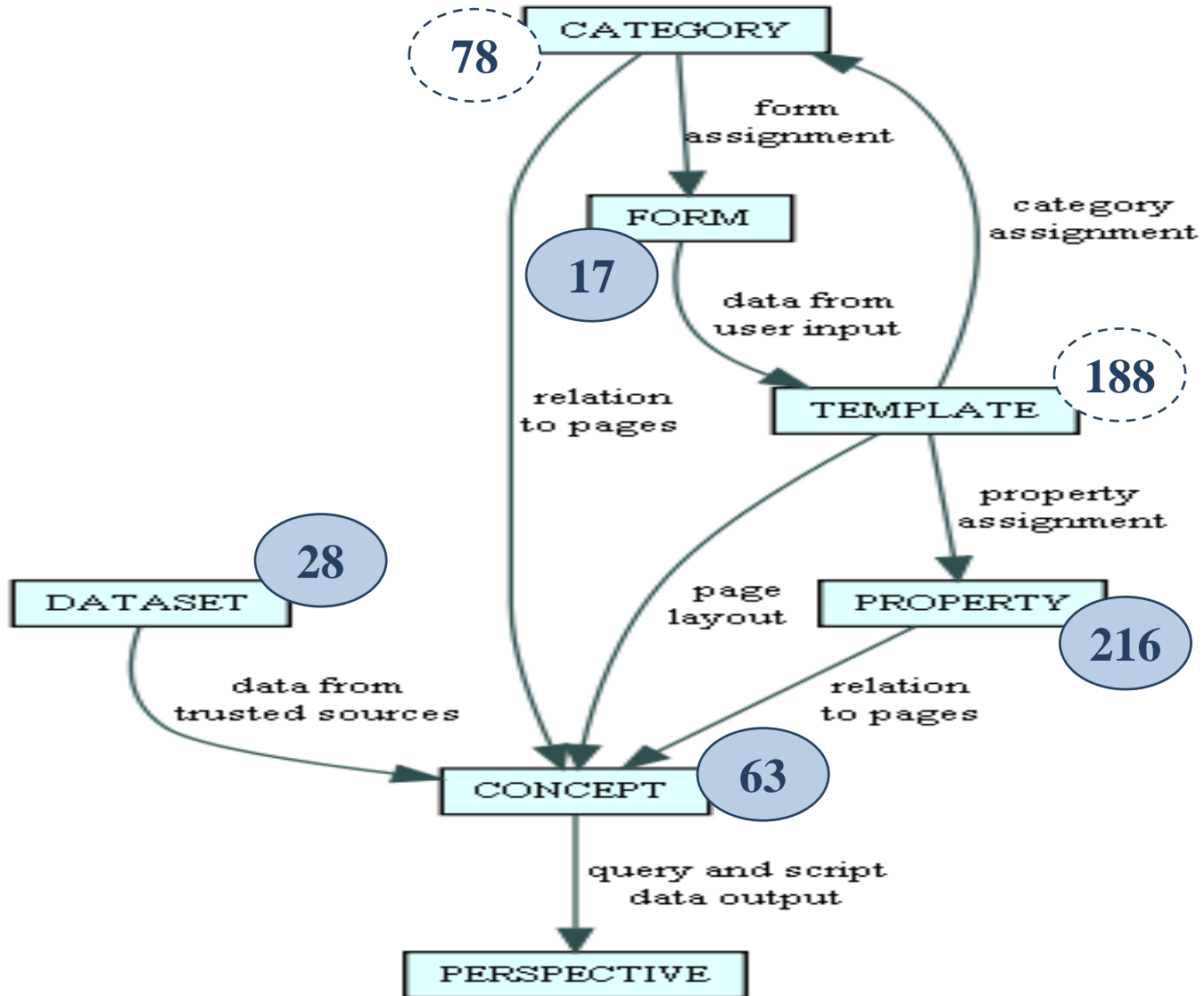
EM Wiki Datasets (data structure)

Field	Type	Remarks
(Undesignated)	String	Exclusive: "TYPE"
(Undesignated)	String	Exclusive: "REFERENCE STAT CLASS DATED OPR LANG S U B J E C T "
REFERENCE	String	
OPR	String	
LANG	String	Exclusive: ENG
STAT	String	Values: FINAL, MILDEC, (Blank)
DATED	Date	Format: "dd-MMM-yyyy"
CLASS	String	Values: NU, NR, NC, NS
(Undesignated)	Number	
SUBJECT	String	
(Undesignated)	String	Exclusive: (Blank)
(Undesignated)	String	Exclusive: (Blank)

Note: All entries are in uppercase characters.

Note: Some SUBJECT values have a leading "(NU) " that can be filtered out.

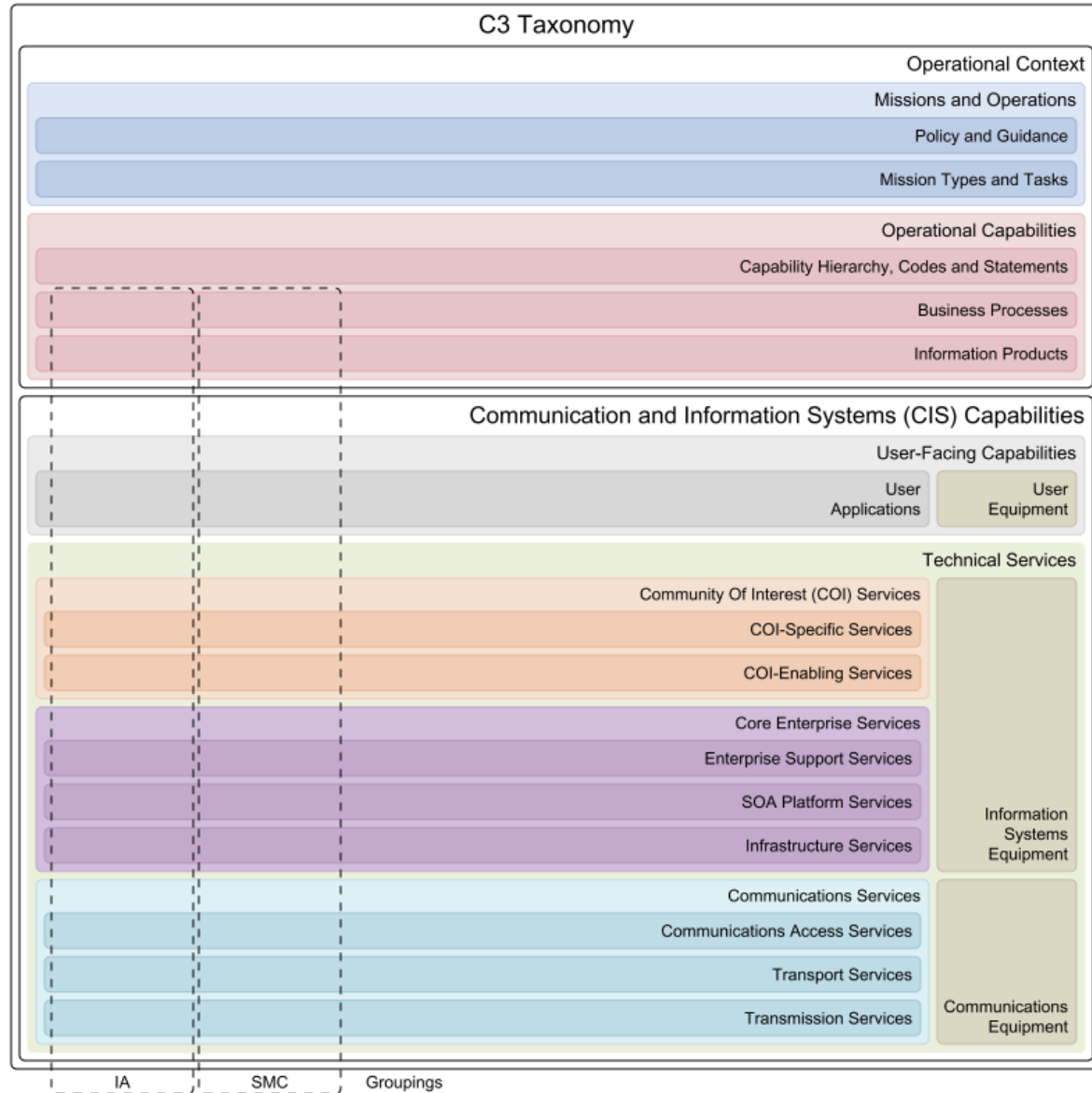
EM Wiki Structure



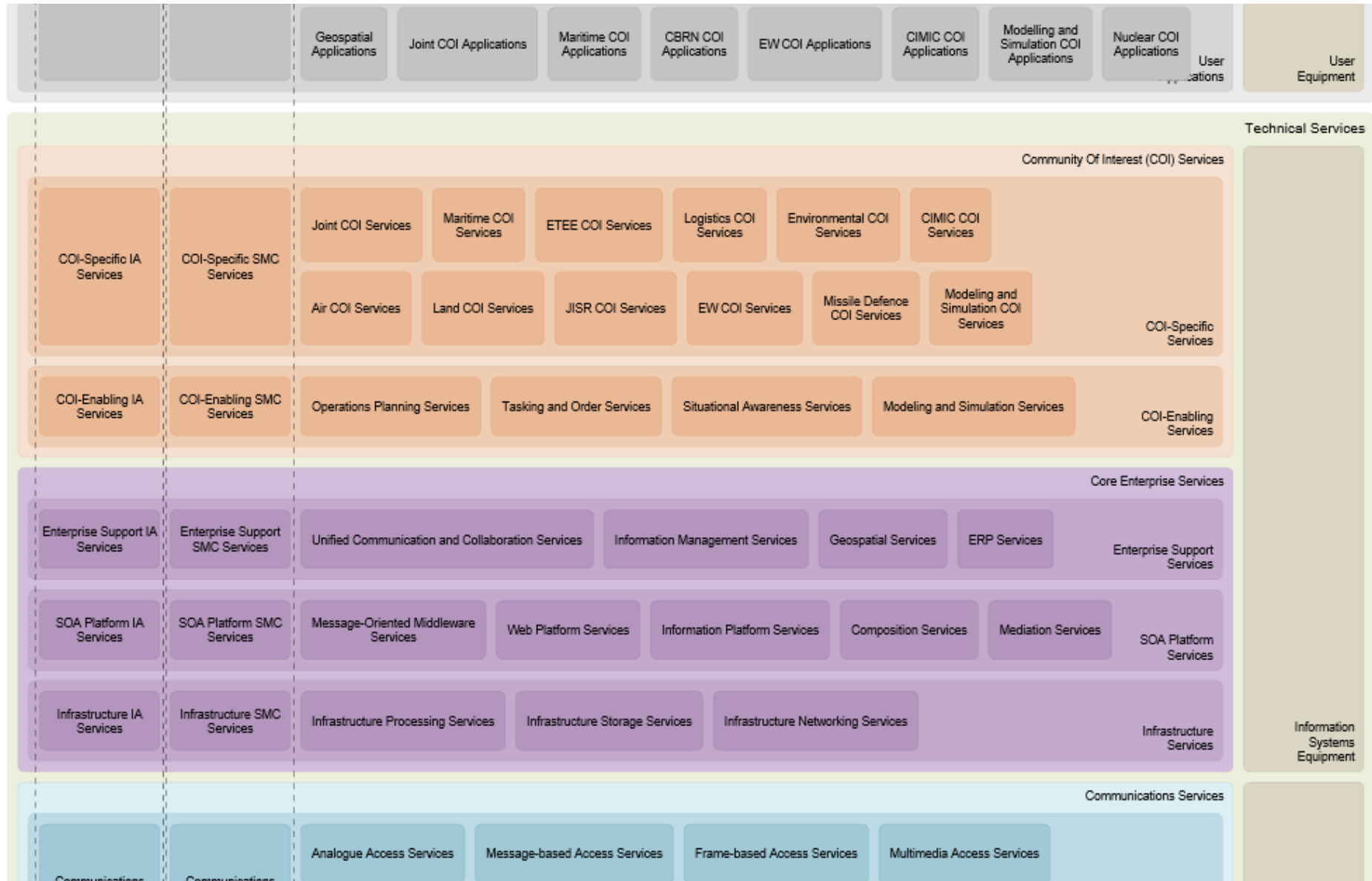
EM Wiki Perspectives

- Perspectives are representations of parts of the EM Wiki through a specific selection for a specific interest.
- Typically, architecture frameworks have detailed descriptions of “views”; many of these can be directly generated from the wiki, and on the wiki.
- The data has value for many different uses, from different perspectives; new reports, charts and data exports are designed and published to satisfy evolving requirements.
- **Daily perspectives** -- automatically generated overnight from the life data in the EM Wiki.
- **Baselined perspectives** – manually stored offline and added to baseline administration for historical reference, including a full RDF dump of the wiki at that time.

C3 Taxonomy



C3 Taxonomy



C3 Taxonomy

COI-Enabling Services

COI-Enabling IA Services

COI-Enabling SMC Services

Data Exchange
Monitoring Services

Operations Planning Services

Operations Estimation
Services

Deployment Plan
Services

Courses of Action
Services

Campaign
Synchronisation
Matrix Services

Order of Battle
Services

Operations
Assessment Services

Environment
Appreciation Services

Operational Plan
Development
Services

Force Generation and
Activation Services

Tasking and Order Services

Resource Allocation
Services

Resource Request
Management Services

Tasking Services

Operations Order
Services

ROE Management
Services

Situational Awareness Services

Recognized Picture
Services

Battlespace Object
Services

Battlespace Events
Services

Track Management
Services

Symbology Services

Modeling and Simulation Services

Coalition Battle
Management Services

Radio Simulation
Services

Ground Truth
Battlespace Objects
Services

Ground Truth
Battlespace Events
Services

Geospatial Map
Development
Services

Core Enterprise Services

Enterprise Support Services

Enterprise Support IA Services

Enterprise Support
Guard Services

Enterprise Support SMC Services

Application Store
Services

Configuration
Management
Database Services

Unified Communication and Collaboration Services

Military Messaging
Services

Informal Messaging
Services

Fax Services

Calendar and
Scheduling Services

Video-based
Communication
Services

Audio-based
Communication
Services

Text-based
Collaboration
Services

Whiteboarding
Services

Presence Services

Document Sharing
Services

Application Sharing
Services

Information Management Services

Content Management
Services

Workflow Services

Enterprise Search
Services

Report Generation
Services

Analytics Services

Language Support
Services

Geospatial Services

Geospatial Catalog
Services

Geospatial Web Map
Services

Geospatial Web
Feature Services

Geospatial Web
Coverage Services

Geospatial Web Map
Tile Services

Geospatial Network
Analysis Services

Geospatial Coordinate
Services

Geospatial Terrain
Analysis Services

ERP Services

Financial Resource
Management Services

Human Resource
Management Services

Supply Chain
Management Services

Enterprise Project
Planning Services

SOA Platform Services

SOA Platform IA Services

SOA Platform Guard
Services

Security Token
Services

Policy Enforcement
Point Services

Policy Decision Point
Services

Information Labeling
Services

Policy Administration
Point Services

SOA Platform SMC Services

SOA SMC Policy
Enforcement Services

Service Discovery
Services

SOA Platform
Monitoring Services

SOA Platform Logging
Services

Service Discovery
Services

SOA Platform
Metering Services

Message-Oriented Middleware Services

Direct Messaging
Services

Message Brokering
Services

Message Routing
Services

Message Proxying
Services

Message Queuing
Services

Message Caching
Services

Web Platform Services

Web Hosting Services

Web Presentation
Services

Web Caching
Services

Web Proxying
Services

Information Platform Services

Information Discovery
Services

Information Access
Services

Information
Aggregation Services

Metadata Repository
Services

Information
Annotation Services

Business Rules
Services

Composition Services

Orchestration
Services

Choreography
Services

Transaction Services

Mediation Services

Protocol
Transformation
Services

Data Format
Transformation
Services

Infrastructure Services

Infrastructure IA Services

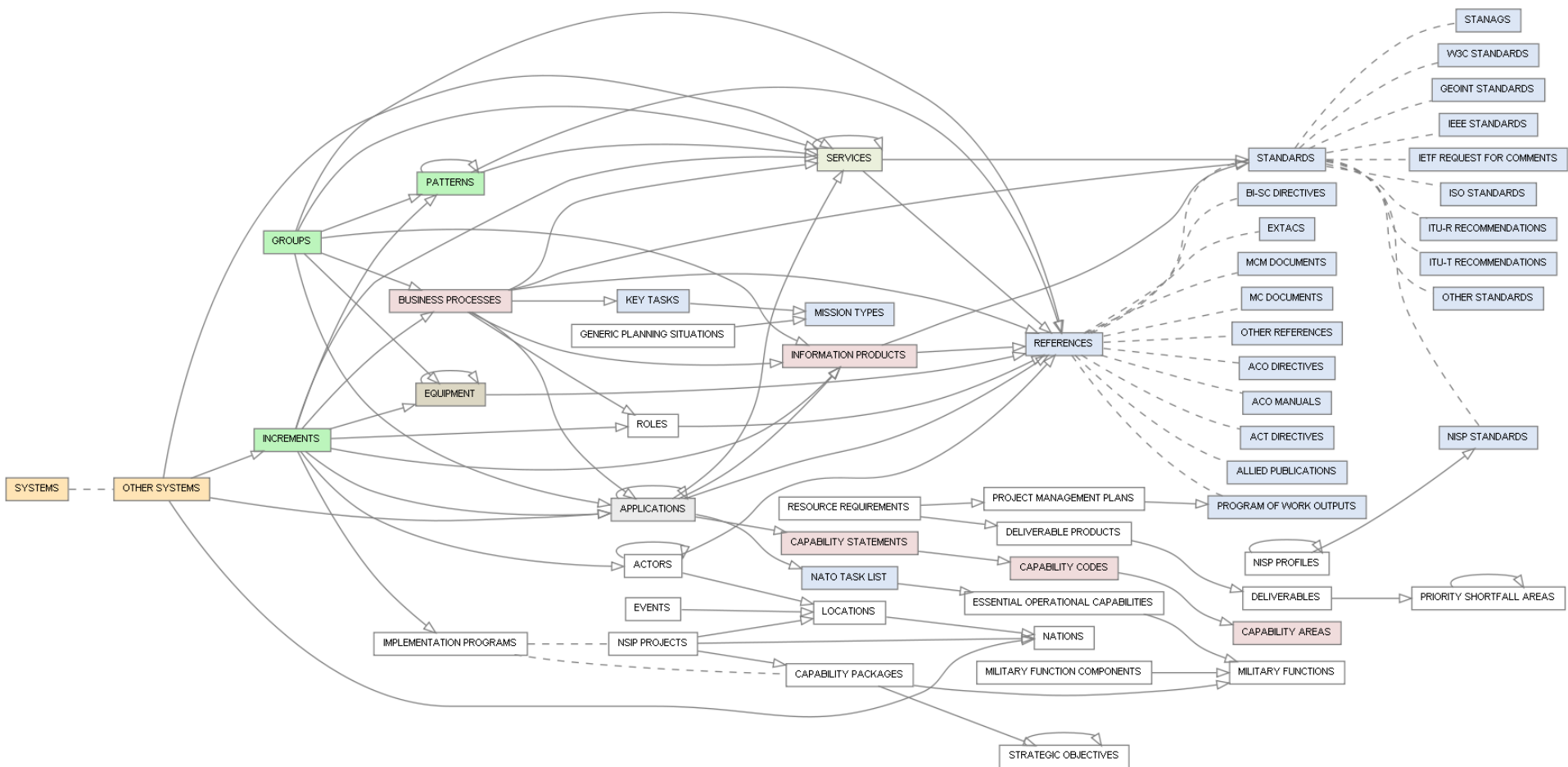
Infrastructure SMC Services

Infrastructure Processing Services

Infrastructure Storage Services

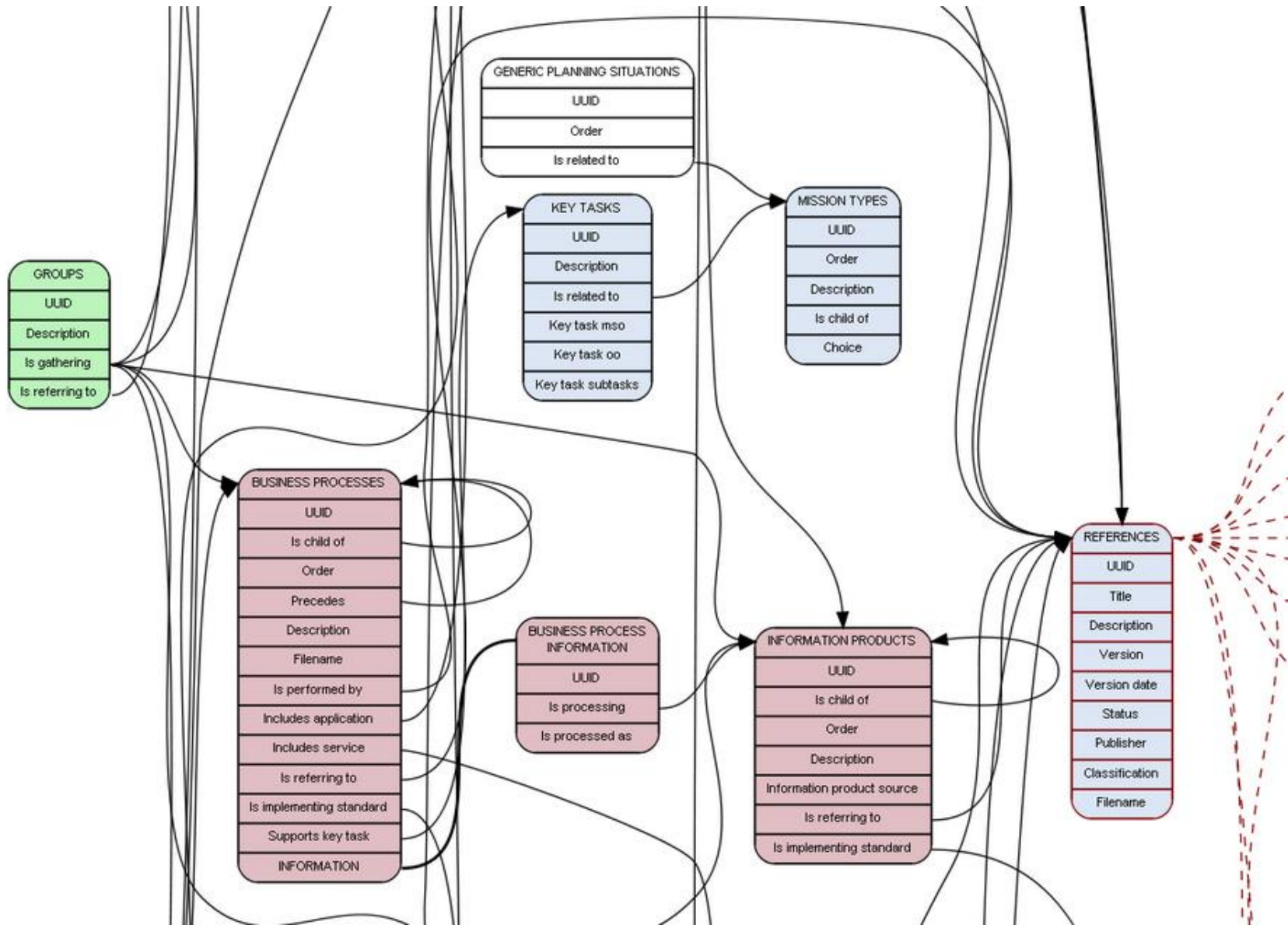
Infrastructure Networking Services

C3 Taxonomy Relationships



[illegible]

C3 Taxonomy Metamodel



EM Wiki Figures

The status of this wiki as of 3:36Z on 22 May 2014 is as follows:

- EM wiki is running MediaWiki version 1.18alpha (r79252).
- EM wiki has 1,042 articles, and 42,657 pages in total.
- EM wiki underwent 214,256 edits.
- EM wiki contains 1,812 uploaded files.
- EM wiki knows 1,637 registered users, including 10 administrators.

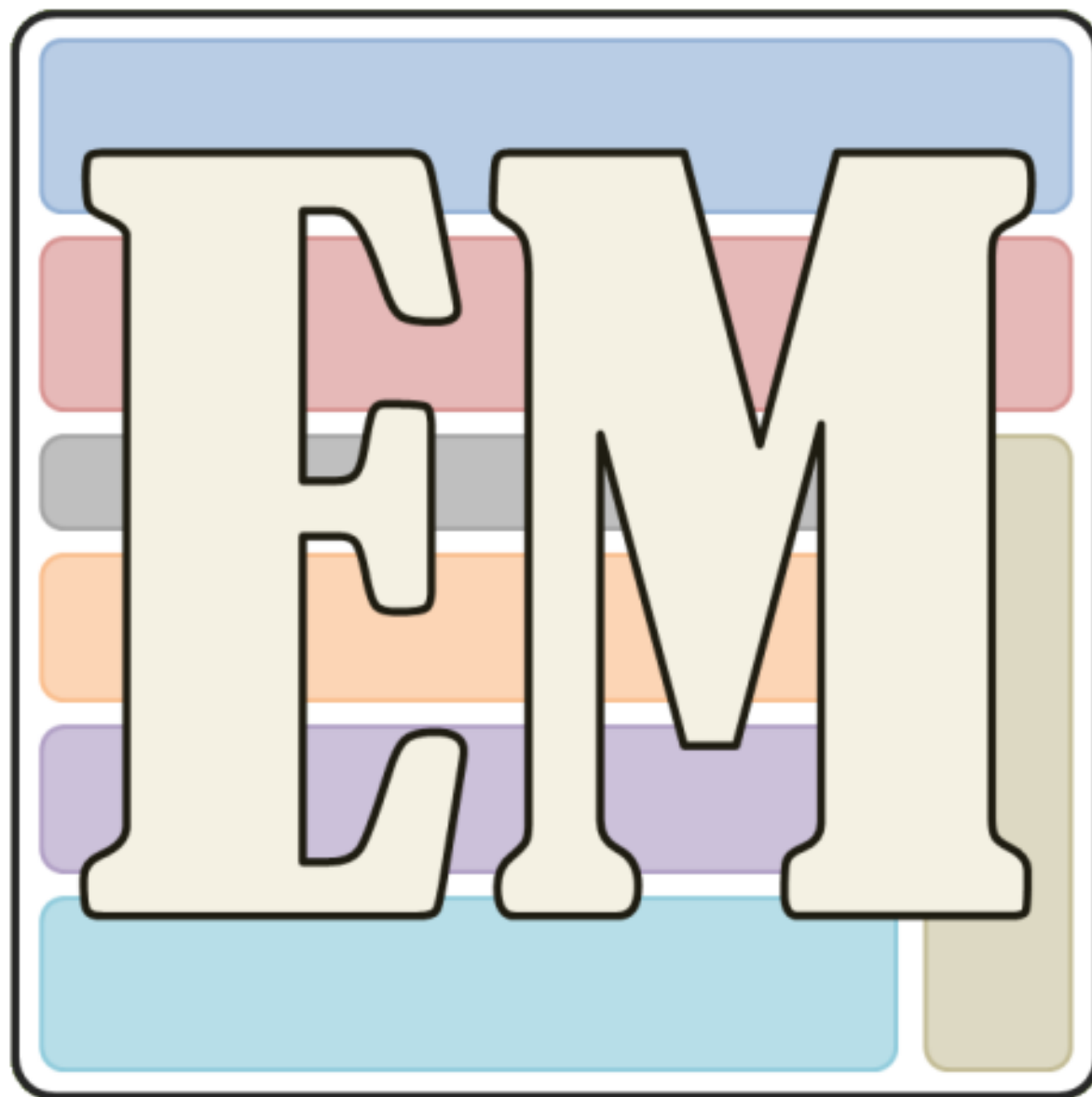
Relevance in NATO

- Enterprise Mapping captures the data for the logical architecture of C3 in the Alliance:
 - Overarching Architecture for policy and guidance
 - Reference Architecture for capability development
- Logical architecture focuses on alignment of concepts, principles and capture of functional and non-functional requirements; it is solution-agnostic
- Attractive outputs provide meaningful products:
 - Daily perspectives automatically generated overnight
 - Baselined perspectives for reference
- The data and the model of EM Wiki is re-used within NATO, and in several nations for national architecture alignment
- Further development and future ambition
- Upgrade of platform hardware and software

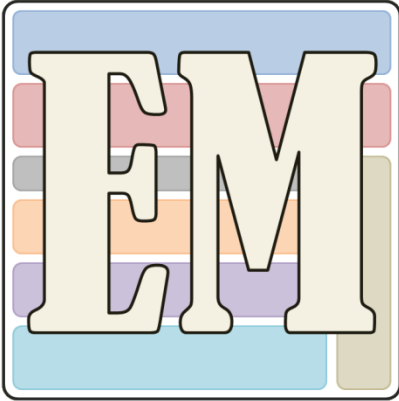
EM Wiki Business Case Review

- **Reason to start Tidepedia** - to create an easy online collaborative platform reaching outside NATO.
- **Reason to start EM Wiki** - to create an EA tool with easy learning curve for subject matter experts, vs dedicated EA tools that are costly and require architecture background.
- **Critical Success Factor** - to provide return on investment for contributors, to keep motivated and committed to content.
- **Critical Design Decision** - to ignore existing frameworks and provide flexible and universal exchange mechanism.

Based upon our experience and the success of our work within our organisation, we couldn't have made a better choice than Semantic Mediawiki. *Big thanks to the SMW community.*



Contact



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Tidepedia Accounts

Submit a request via email to tide@act.nato.int with the following:

- First and last name
- Organization - command/agency/company name and country
- Sponsor (if the organization is non-military) -> [use Peter ;-\)](#)
- Email address - confirmation and instructions go here